

Title (en)  
HYDROXYPHENYL CROSS-LINKED MACROMOLECULAR NETWORK AND APPLICATIONS THEREOF

Title (de)  
MIT HYDROXYPHENYL QUERVERNETZTES MAKROMOLEKULARES NETZWERK UND ANWENDUNGEN DAVON

Title (fr)  
RESEAU MACROMOLECULAIRE RETICULE D'HYDROXYPHENYLE ET SES APPLICATIONS

Publication  
**EP 1587945 A4 20060322 (EN)**

Application  
**EP 04701177 A 20040109**

Priority  
• US 2004000478 W 20040109  
• US 43920103 P 20030110

Abstract (en)  
[origin: WO2004063388A2] A dihydroxyphenyl cross-linked macromolecular network is provided that is useful in artificial tissue and tissue engineering applications, such as artificial or synthetic cartilage. The network is made by first providing a polyamine or polycarboxylate macromolecule (having a plurality of amine or carboxylic acid groups respectively attached along the length of the molecule), reacting this macromolecule with a hydroxyphenyl compound having a free carboxylic acid group in the case of a polyamine or a free primary amine group in the case of a polycarboxylate, and substituting the hydroxyphenyl compound onto the macromolecule via a carbodiimide-mediated reaction pathway to provide a hydroxyphenyl-substituted macromolecule. This macromolecule is then linked to other such macromolecules via an enzyme catalyzed dimerization reaction between two hydroxyphenyl groups attached respectively to different macromolecules under metabolic conditions of temperature and pH. In a preferred embodiment, the macromolecular network is made up of tyramine-substituted hyaluronan molecules that are linked by dityramine bonds to provide a stable, coherent hydrogel with desired physical properties. A method of preparing such a network is also provided.

IPC 8 full level  
**A61K 31/74** (2006.01); **A61K 31/765** (2006.01); **A61K 47/34** (2006.01); **A61K 47/36** (2006.01); **A61K 47/42** (2006.01); **A61L 27/14** (2006.01); **A61L 27/52** (2006.01); **C08F 261/02** (2006.01); **C08G 63/48** (2006.01); **C08G 63/81** (2006.01); **C08G 63/91** (2006.01); **C08G 73/02** (2006.01); **C08L 71/00** (2006.01)

IPC 8 main group level  
**C12Q** (2006.01)

CPC (source: EP US)  
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• [A] THORNTON, THOMAS D.; SAVAGE, PHILLIP E.: "Phenol oxidation pathways in supercritical water", INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, vol. 31, 1992, pages 2451 - 2456, XP002363819  
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Designated contracting state (EPC)  
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**WO 2004063388 A2 20040729; WO 2004063388 A3 20050901**; AU 2004204465 A1 20040729; AU 2004204465 A2 20040729; AU 2004204465 B2 20091119; CA 2512730 A1 20040729; CA 2512730 C 20130402; CN 100467538 C 20090311; CN 101366974 A 20090218; CN 1826381 A 20060830; EP 1587945 A2 20051026; EP 1587945 A4 20060322; EP 1587945 B1 20171101; JP 2006517598 A 20060727; JP 5325385 B2 20131023; US 2004147673 A1 20040729; US 2005265959 A1 20051201; US 6982298 B2 20060103; US 7368502 B2 20080506

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